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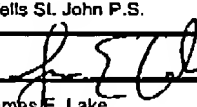
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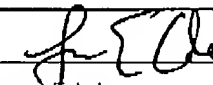
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TRANSMITTAL FORM (to be used for all correspondence after initial filing)	Application Number	09/810,387	
	Filing Date	March 15, 2001	
	First Named Inventor	Craig M. Carpenter	
	Art Unit	1763	
	Examiner Name	R. Zervigon	
Total Number of Pages in This Submission	9	Attorney Docket Number	MI22-1559

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application Serial No. 09/810,387
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Filing Date March 15, 2001
Inventor Craig M. Carpenter
Assignee Micron Technology, Inc.
Group Art Unit 1763
Examiner R. Zervigon
Attorney's Docket No. MI22-1559
Customer No. 021567
Title: Chemical Vapor Deposition Apparatuses and Deposition Methods

REPLY BRIEF OF APPELLANT

To: Mail Stop Appeal Brief-Patents
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From: James E. Lake (Tel. 509-624-4276; Fax 509-838-3424)
Wells St. John P.S.
601 W. First Avenue, Suite 1300
Spokane, WA 99201-3828

Appellant herein replies to the March 12, 2007 Examiner's Answer.

Appellant maintains all of the assertions made in the previous Brief of Appellant, but provides the following supplemental remarks responsive to allegations in the Examiner's Answer.

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VII.A-B. Rejection of claim 44 under 35 U.S.C. 112, first paragraph, regarding enablement and objection to the specification under 35 U.S.C. 132.

Regardless of the allegations made on pages 13-14 of the Examiner's Answer, the Brief of Appellant enumerates and shows compliance with the legal standards for evaluating enablement. The Examiner's Answer does not allege that Appellant relied on an improper standard or somehow misapplied the pertinent standard. Remarks in the Examiner's Answer regarding whether there exists a "reason to believe" that the claimed elements are not enabled do not appear to be founded on substantial evidence. Also, while the Examiner's Answer appears somewhat to agree that conventional distribution showerheads are ubiquitous, it denies skilled persons the knowledge of how to incorporate such a well-known feature into the claim 44 device. At least for such reasons, Appellant reiterates a request for withdrawal of the lack of enablement rejection and of the objection to the specification.

VII.C. Rejection under 35 U.S.C. 102(b) or 103(a) over Posa or over Posa in view of Fukui.

Page 15 of the Examiner's Answer alleges that Posa discloses a single-piece lid and refers to the "constant cross hatching" in Figure 2 of Posa for support. Appellant asserts that the Examiner's allegation fails to consider Posa as a whole, as is required. Specifically, Figure 2 of Posa only shows part, presumably one-half, of manifold 100. Regardless of whether the portion of manifold 100 shown in Figure 2 might be considered "single-piece,"

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given the complexity of manifold 100, manufacture of the whole manifold 100 as a single-piece seems unlikely, if not impossible.

Figure 2 of Posa shows manifold 100 with several cavities and paths of different dimensions and orientations connected in specific ways to provide a network of flow patterns. Even if the portion of manifold 100 shown in Figure 2 could be manufactured as a single-piece, Appellant asserts that the Office has not established support by presenting substantial evidence of the existence of any manufacturing technique capable of making the whole manifold 100 as a single-piece. Aside from the minimal evidence that Figure 2 shows manifold 100 with constant cross hatching, no evidence exists that manifold 100 is or may be provided as a single-piece unit.

Also, pages 15-17 of the Examiner's Answer alleges that optimizing relative dimensions of the Posa apparatus would not render it inoperable for its intended purpose. Appellant asserts that the Examiner's allegation fails to consider claim 46 as a whole, as is required. Appellant's discussion on pages 11-12 of the Brief of Appellant clearly refers to the lid thickness and chamber body width, as well as the chamber body thickness, in discussing the deficiencies of Posa. That is, claim 46 sets forth a lid "having a thickness which is much less than a width of the body and which is similar to a thickness of the body." The Examiner's Answer ignores part of the subject relative dimensions in its discussion of Appellant's assertions.

Viewing Figure 2 of Posa, for example, modification thereof such that manifold 100 has a thickness less than the width of process chamber 16 and such that process chamber 16 has a wall thickness similar to a thickness of

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manifold 100 without doubt constitutes a drastic change in the relative dimensions of the Posa device. Combination of the various valves, cavities, and paths within manifold 100 inevitably requires some minimum amount of thickness. Shrinking manifold 100 thickness such that it is similar to the wall thickness of process chamber 16 necessarily fundamentally changes the manner in which the elements of manifold 100 may fit within its thickness. Such a drastic modification may even preclude providing the valves, cavities, and paths shown in Figure 2 within the thickness of manifold 100. If, conversely, the wall thickness of process chamber 16 is increased to match the thickness of manifold 100, process chamber 16 will exhibit an immensely large and unnecessary thickness. Appellant reiterates that no teaching or suggestion exists in the cited art to make the drastic modifications to the Posa device alleged in the Examiner's Answer.

At least for the indicated reasons, Posa fails to establish prima facie obviousness of claim 46. As may be appreciated from the express limitations of claims 41 and 42, such claims are also patentable over Posa. Claim 43 depending from claim 41 stands rejected as being unpatentable over Posa in view of Fukui. However, Fukui does not remedy and is not alleged to remedy the above indicated deficiencies of Posa. Accordingly, claim 43 is patentable over the cited combination.

VII.D. Rejection under 35 U.S.C. 102(b) or 35 U.S.C. 103(a) over Fukui or Fukui in view of Waterfield.

Page 18 of the Examiner's Answer states that "the Examiner remains convinced" that Fukui's needle valve holder 7 and solution-escaping inhibitor

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or fence 14 are "part and parcel part of the same unitary structure." Pages 18-19 continue discussion elaborating the reasoning for the Examiner's belief. However, Appellant asserts that no substantial evidence exists supporting the allegations in the Examiner's Answer and that they contradict the express teachings of Fukui.

The allegations are firstly based on the Examiner's assumptions regarding the intent of the draftsman and inventors in the way the application was written. Such assumptions contradict the express teachings of Fukui. Fukui assigns different reference numerals to needle valve holder 7 and fence 14 giving one indication that they are separate elements. Fukui attributes a different function to needle valve holder 7 and fence 14 (solution-escaping inhibitor) giving another indication that they are separate elements. Fukui shows needle valve holder 7 and fence 14 as separate elements in Figure 2, giving a further indication that they are separate elements. The express indications in Fukui dictate against the assumptions regarding the intent of the draftsman and inventors and the conclusion that the thickness of fence 14 is really the identical dimension as needle valve holder 7 instead of as literally shown.

The allegations are secondly based on the Examiner's assumptions regarding the best way to interrelate needle valve holder 7 with fence 14. Page 19 of the Examiner's Answer alleges that if needle valve holder 7 were separate from fence 14, then flow path 11 "would necessarily have to break off from 7 in order to remove" needle valve holder 7 from fence 14. The Examiner's Action essentially admits that fence 14 shown in Figure 1 of Fukui

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merely depicts a functional arrangement for a solution-escaping inhibitor. Yet, the Examiner's Answer alleges that flow path 11 "necessarily" would break off from needle valve holder 7 upon removal from interrelation with fence 14, unless needle valve holder 7 and fence 14 are unitary.

Such a conclusion assumes much more than is reasonably shown or taught by Fukui regarding the properties of fence 14. Appellant asserts that there exists a great number of possible designs for fence 14 and configurations for interrelating needle valve holder 7 with fence 14 that would allow such elements both to be separate elements and to be removed from one another without "breaking" flow path 11. If fence 14 shown in Figure 1 is merely a functional descriptor, then the extremely limiting assumptions made in the Examiner's Answer regarding its properties must be considered to lack the support of substantial evidence.

At least for such reasons, the references and cited combinations fail to disclose or suggest every claim limitation and the Office Action fails to establish prima facie obviousness.

VII.E. Rejection under 35 U.S.C. 103(a) over Fukui in view of Jeong.

Pages 19-22 of the Examiner's Action apparently fail to recognize the significance of Fukui describing an ultrasonic wave sprayer limited to spraying solutions and the Jeong gas distribution manifold 19 being limited to distributing gas in a chemical vapor deposition (CVD) device. The Background section of Fukui discusses formation of thin films using evaporation or sputtering techniques, well known as within the classification

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of physical vapor deposition (PVD). PVD and CVD are well known as different classifications of deposition methods that rely upon different operating principles and that typically use different deposition apparatuses. Those of ordinary skill would not necessarily expect elements of a CVD apparatus to yield equivalent benefits in a PVD apparatus.

In the present circumstance, Fukui teaches its method as an alternative to evaporation or sputtering and it also constitutes PVD, at least by virtue of spraying an atomized solution. To those of ordinary skill, it is clear that manifold 19 in the Jeong CVD apparatus for distributing a gas does not necessarily function as intended in the Fukui PVD apparatus for spraying an atomized solution. It is irrelevant, contrary to the page 21 allegation in the Examiner's Answer, that Fukui and Jeong both process "fluids" (i.e. liquids or gases). The principles of operation in the two apparatuses are fundamentally different. The page 21 notation in the Examiner's Answer that Fukui processes a carrier gas through gas-supplying path 12 is further irrelevant; it merely "carries" the atomized liquid. No gas processing occurs in the absence of liquid processing.

Page 21 of the Examiner's Answer emphasizes that the motivation for modification includes achieving CVD film thickness uniformity as taught by Jeong in CVD operations. However, no evidence exists that distributing an atomized, sprayed solution in a PVD apparatus (Fukui) using a CVD manifold (Jeong) produces film thickness uniformity. Further, Fukui cannot be considered to produce "CVD" film thickness uniformity since it relies on PVD methodology.


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Accordingly, no motivation may be considered to exist to modify Fukui in the manner alleged and the cited combination fails to disclose every limitation of claim 44.

Appellant herein further supports the previously established adequate reasons for patentability of claims 1-29, 37, 38, 40-44, and 46 and requests allowance of all pending claims.

Respectfully submitted,

Dated: 14 May 2007

By: 
James E. Lake
Reg. No. 44,854